<u>REMARKS</u>

Reconsideration and allowance are respectfully requested in light of the above amendments and the following remarks.

Claims 1-15 have been canceled in favor of new claims 16-30, which better define the subject matter Applicants regard as the invention. Support for the features recited in claims 16-30 is provided by the original claims and the specification on page 2, lines 19-23.

Claims 1-5, and 7-15 were rejected, under 35 USC §102(e), as being anticipated by Webb (US 5,828,695). Claim 6 was rejected, under 35 USC §103(a), as being unpatentable over Webb in view of Gilhousen et al. (US 5,603,096). To the extent these rejections are deemed applicable to new claims 16-30, Applicants respectfully traverse.

The present invention is directed to maintaining good communication quality by making an adaptive equalizer keep sufficient following-performance, without increasing the number of apparatus components, even when the channel variation is considerably fast due to high-speed fading. Features of the present invention that help achieve this objective include determining a symbol rate based on a channel variation speed, performing transmission by increasing the symbol rate as the fast fading causes considerably fast channel variation, and making the

channel variation either between symbols or in a burst relatively
minute.

Accordingly, new claim 16 recites:

> *A transmitting apparatus used in a mobile*
> *communication system to transmit a signal by radio to a*
> *communicating party, the transmitting apparatus*
> *comprising:*
> *a symbol rate determiner that determines a symbol*
> *rate of a transmitting signal based on a channel*
> *variation speed between transmission and reception of a*
> *received signal, said symbol rate of the transmitting*
> *signal being made greater in response to an increase in*
> *the channel variation speed so as to make a channel*
> *variation between symbols or in a burst relatively*
> *minute; and*
> *a transmitter that transmits data by radio based*
> *on said determined symbol rate.*

Applicants submit that Webb fails to disclose the feature
recited in claim 16 wherein: (1) a symbol rate of a transmitting
signal is determined based on a channel variation speed between
transmission and reception of a received signal and (2) the
symbol rate of the transmitting signal is made greater in
response to an increase in the channel variation speed. The
Office Action proposes that Webb discloses feature (1) in column
3, lines 7-32 (Office Action section 1, second paragraph).

However, in the cited portion of Webb's specification, Webb
discloses that a transmission received by a mobile station is
used to estimate the channel integrity, which then dictates the
number of QAM levels to be used by the mobile station transmitter

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(Webb col. 3, lines 12-15). And the amount of data communicated in a TDD time slot is related to the traveling speed of the mobile station, to prevent the channel from changing significantly during the time slot (col. 3, lines 24-26).

In short, Webb discloses varying the number of QAM levels in accordance with an estimated channel quality. As a result of changing the number of QAM levels (i.e., modulation type) for the communication of data within a time slot, the amount of data and, thereby, the data rate communicated in the time slot are changed. Simply put, Webb discloses changing the number of bits per symbol in accordance with an estimated channel parameter. Varying the number of bits per symbol is not the same as varying a symbol rate, as recited in claim 16. In the specific example disclosed in the cited portion of Webb's disclosure, Webb discloses a fixed symbol rate of 512 KSym/s and varying the data rate in accordance with the number of QAM levels to maintain the fixed symbol rate (see Webb col. 3, lines 7-28).

Moreover, claim 16 recites that the symbol rate of a transmitting signal is made greater in response to an increase in the channel variation speed. Since Webb does not disclose varying the symbol rate in accordance with an estimated channel parameter, as proposed in the Office Action, it necessarily

follows that this disclosure does not teach increasing the symbol rate in response to an increase in the channel variation speed.

Accordingly, Applicants submit that Webb does not anticipate the subject matter defined by claim 16. Therefore, allowance of claim 16 and all claims dependent therefrom is warranted.

Claim 17 recites that the symbol rate determiner of claim 16 determines the symbol rate such that a product of a transmitting time and a channel variation speed per symbol maintain a constant value. This feature is similar to that recited in original claim 2. The Office Action proposes that Webb discloses this feature in column 2, lines 37-41 and column 4, line 64, through column 5, line 49 (see Office Action page 2, last paragraph).

However, in column 2, lines 37-41, Webb discloses a variable bit rate that is nearly constant over long periods but may vary instantaneously by four times the average rate. In columns 4 and 5, Webb discloses selecting the number of QAM levels in a modulation scheme to achieve a specified BER and, alternatively, selecting the number of QAM levels to achieve a constant average bit rate while accepting a variable BER. These features are not similar to that recited in claim 17. Although citing large swaths of Webb's disclosure may obscure the evidence, it does not change it. Webb simply does not describe the feature recited in claim 17. Therefore, allowance of claim 17 is warranted.

Claim 20 recites controlling a central frequency of a carrier wave based on a determined symbol rate. This feature was originally recited in claim 5. The Office Action proposes that Webb discloses this feature in column 3, lines 26-28, and column 5, line 63, through column 6, line 4 (see Office Action page 3, third paragraph).

However, in column 3, lines 26-28, Webb discloses that blocks of 100 symbols were used for transmissions at 512 KSym/s, a mobile speed of 30 mph, and a carrier frequency of 1.9 GHz. In the cited portion of columns 5 and 6, Webb discloses an adaptive QAM system having its modulation-type switching thresholds adjusted to give 4 bits/sym (Webb col. 5, lines 64-66). The necessary signaling information of the number of QAM levels used was taken into account in calculating the throughput (col. 5, line 66, through col. 6, line 1). A simulation was performed for a propagation frequency of 1.9 GHz, a vehicular speed of 30 mph, and a transmitted symbol rate of 512 KSym/sec to provide a bit rate of 2048 Kbits/sec on average (col. 6, lines 1-4).

As may be determined by inspection of Webb's disclosure, as provided above, Webb discloses a fixed carrier frequency of 1.9 GHz. Webb does not disclose varying the carrier frequency in accordance with the symbol rate, as recited in claim 20. Therefore, allowance of claim 20 is warranted.

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Independent claims 18, 19, 29, and 30 similarly recite

feature (1), described above in connection with apparatus claim

16, though claims 29 and 30 do so with respect to a method.

Independent claims 24, 26, and 28 similarly recite both features

(1) and (2), described in connection with claim 16, though claim

28 does so with respect to a method. For similar reasons that

features (1) and (2) distinguish claim 16 from Webb, so too does

feature (1) distinguish claims 18, 19, 29, and 30 and both

features (1) and (2) distinguish claims 24, 26, and 28.

Therefore allowance of claims 18, 19, 24, 26, and 28-30 is
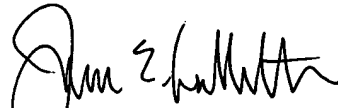
warranted.

Gilhousen is cited in the Office Action for teaching a

transmitter that transmits a signal only when a received signal

level is high (Office Action page 5, last paragraph). This

feature does not supplement Webb's disclosure with regard to the

above-described features distinguishing the independent claims

from Webb.

In view of the above, it is submitted that this application

is in condition for allowance and a notice to that effect is

respectfully solicited.

If any issues remain which may best be resolved through a

telephone communication, the Examiner is requested to telephone

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the undersigned at the local Washington, D.C. telephone number

listed below.

Respectfully submitted,

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